

WHAT IS CLAIMED IS:

CLAIM 1. A coupler having a female-end for connection to a male-end of an element, comprising:

a main frame;

a collet means mounted for slidable movement by said main frame, said collet means comprising flexible engaging means for engaging a cooperating portion of a male-portion of an element;

an outer retaining member mounted for sliding by said main frame, said outer retaining member being at least partially telescopingly movable about said collet means for preventing said flexible engaging means from disengaging with the male-portion of an element, and comprising first engaging means;

an inner retaining means mounted by said main frame for relative sliding motion with respect to said outer retaining member, and comprising second cooperating means, said inner retaining means capable of retaining said outer retaining member in a retained position via said first and second cooperating means;

means for translating said flexible engaging means of said collet means;

said means for translating comprising third cooperating means in operative association with said collet means and said outer retaining member for alternatively moving said collet means in a first direction and in a second direction

CLAIM 2. The coupler according to claim 1, further comprising sealing means operatively associated with said main frame for providing a seal for a male-end of an

element; said means for translating comprising wedge means having a first wedge-surface, a second wedge-surface and a third wedge-surface; said main frame comprising a first canted-surface means for contact with said first wedge surface of said wedge means for movement of said wedge means therealong; said outer retaining member comprising a second canted-surface means for contact with said second wedge-surface of said wedge-means; and said collet means comprising engaging surface means for contact with said third wedge-surface; said wedge means causing said collet means to move relative to said main frame by said contacting third wedge-surface and said engaging surface means when said retaining member is moved relative to said collet means by contact of said second canted-surface means with said second wedge-surface of said wedge-means.

CLAIM 3. The coupler according to claim 1, wherein each of said first cooperating means and said second cooperating means comprises a canted surface for compressing said inner retaining member, and further comprising cooperating locking means for retaining said outer retaining member in a position relative to said compressible inner retaining member for keeping said inner retaining member in a compressed state.

CLAIM 4. The hose coupler according to claim 3, wherein said means for translating comprises wedge means having a first wedge-surface, a second wedge-surface and a third wedge-surface; said main frame comprising a first canted-surface means for contact with said first wedge surface of said wedge means for movement of said wedge means therealong; said outer retaining member comprising a second canted-surface means for

contact with said second wedge-surface of said wedge-means; and said collet means comprising engaging surface means for contact with said third wedge-surface; said wedge means causing said collet means to move in said main frame by said contacting third wedge-surface and said engaging surface means when said outer retaining member is moved relative to said collet means by contact of said second canted-surface means with said second wedge-surface of said wedge-means.

CLAIM 5. The hose coupler according to claim 1, wherein said inner retaining means comprises a flexible, compressible sleeve; said first cooperating means and said second cooperating means comprises compressing means for compressing said inner retaining member; said flexible, compressible sleeve comprising third cooperating means, and said collet means comprising fourth cooperating means, said third cooperating means and fourth cooperating means cooperating being in operative engagement so that when said said first cooperating means and said second cooperating means compress said flexible, compressible sleeve, said collet means is allowed greater translational movement by said means for translating.

CLAIM 6. In a coupler having a female-end for connection to a male-end of an element, comprising:

a main body portion;

collet means mounted for slidable movement relative to said main body portion, said collet means comprising flexible engaging means for engaging a portion of a male-portion of an element;

an outer retaining member mounted for sliding relative to said main frame, said outer retaining member being at least partially telescopingly movable about said collet for preventing said flexible engaging means from disengaging with the male-portion of an element, and comprising first engaging means;

retaining means capable of holding said outer retaining member in a locking position; and

means for moving said flexible engaging means of said collet means toward and away from said main body portion.

CLAIM 7. The coupler according to claim 6, wherein said means for moving comprises wedge means having a first wedge-surface, a second wedge-surface and a third wedge-surface; said main body portion comprising a first canted-surface means for contact with said first wedge surface of said wedge means for movement of said wedge means therealong; said outer retaining member comprising a second canted-surface means for contact with said second wedge-surface of said wedge-means; and said collet means comprising engaging surface means for contact with said third wedge-surface; said wedge means causing said collet means to move relative to said main body portion by said contacting third wedge-surface and said engaging surface means when said retaining member is moved relative to said collet means by contact of said second canted-surface means with said second wedge-surface of said wedge-means.

CLAIM 8. The coupler according to claim 6, wherein said outer retaining member comprises a first cooperating means; said retaining means being mounted by said main

body portion for relative sliding motion in said outer retaining member, and comprising second cooperating means; said retaining means comprising a compressible member capable of holding said outer retaining member in a locking position via said first and second cooperating means;

each of said first cooperating means and said second cooperating means comprising means for compressing said retaining means, and further comprising cooperating locking means for locking said outer retaining member in a position relative to said compressible member for keeping said compressible member in a compressed state.

CLAIM 9. The hose coupler according to claim 6, wherein said retaining means comprises a compressible member having a first end-portion and a second end-portion; said collet means being capable of abutting contact with said second end-portion of said compressible member; said outer retaining member having means for compressing said compressible member when said outer retaining member is moved in the direction of said collet means, whereby when said compressible member is compressed, said collet means is allowed movement by said means for moving in a direction toward said main body portion to thereby secure a male-end held in said flexible engaging means.

CLAIM 10. The coupler according to claim 9, wherein said compressible member comprises a tubular element having cutout means in order to form a plurality of furcated arms; said tubular element having an outer circumferential surface and first cooperating means formed on said outer circumferential surface; said outer retaining member

comprising said second cooperating means for cooperating with said first cooperating means for compressing said plurality of arms; and further comprising additional cooperating means for releasably holding said outer retaining member in a position relative to said compressible member for keeping said compressible member in a compressed state.

CLAIM 11. A method of coupling a male-end of an element, comprising:

- (a) inserting a male-end into a flexible, floating collet member having mating engaging means for the male-end;
- (b) said step (a) comprising pushing the male-end thereagainst to cause the engaging means of the collet member to initially engage with the male-end inserted therein and for moving the collet member a first lateral distance by contact of the collet means against a limit-stop;
- (c) after said step (b), allowing the collet member additional lateral movement;
- (d) said step (c) sealing the male-end against the sealing member;
- (e) said step (c) comprising moving the limit stop a distance that allows said additional lateral movement.

CLAIM 12. The method according to claim 11, wherein said step (e) comprises compressing a compressible member having engaging means that engage with said collet member, said step of compressing moves the engaging means away from the collet member to thus allow said additional lateral movement.

CLAIM 13. The method according to claim 12, wherein said step of compressing comprises initially sliding an outer setting sleeve about the compressible member; said method further comprising retaining said collet in its engaged sealing state with the male-end, said step of retaining comprising additionally sliding said outer setting sleeve for lockingly engaging means on the outer setting sleeve with cooperating engaging means on the compressible member, whereby the threaded male-end is held locked in sealed relationship with the sealing member.

CLAIM 14. A coupler having a female-end for connection to a male-end of an element, comprising:

- a main frame having at least one cutout formed therein;

- a collet means mounted for slidable movement at least partially about said main frame;

- a compressible female-end member for engaging a threaded male-end of a hose or faucet and the like;

- said compressible female-end member comprising projecting means projecting into said at least one cutout of said main frame;

- sealing means in said main frame for providing an initial seal for a male-end of an element inserted in said compressible female-end member;

- said slidable collet means comprising locking means for locking said collet means in place in a first position when said compressible female-end member locks a male-end therein, said first position closing off said at least one cutout to prevent expansion of said compressible female-end member, and, when said locking means is released, allowing

said slidable collet means to a second position exposing said at least one cutout to allow expansion of said compressible female-end member to thereby disengage with a male-end;

said sealing means comprising a washer in contact with a male-end of a hose or faucet inserted in said compressible female-end member, a piston member, and biasing means for biasing said piston member toward said compressible female-end member frame for providing said initial seal, said piston member having a surface greater than the surface area of said washer.

CLAIM 15. The coupler according to claim 14, wherein said collet comprises a thicker section facing toward said compressible female-end member, and a thinner section defining first cooperating means; said main body portion comprising second cooperating means for engaging with said first cooperating means for maintain said collet in said first position, and when disengaged allowing said collet to be slid to said second position; said thinner section comprising an annular end-surface defining said first cooperating means; said second cooperating means comprises at least one detent means projecting outwardly from said main body portion; said locking means comprising push-means projecting outwardly from said thinner section of said collet means, whereby when said push-means is squeezed, said thinner section is distorted to allow clearance of said annular end-surface past said second cooperating means.

CLAIM 16. The coupler according to claim 15, wherein said locking means comprises two said push-means spaced 180 degrees apart, and said second cooperating means

comprises two said detent means spaced 180 degrees apart, said spacing of said two push-means being 90 degrees out of phase with said spacing of said two detent means.

CLAIM 17. A coupler having a female-end for connection to a male-end of an element, comprising:

- a main body portion having a first end and second end;
- outer retaining means mounted for slidable relative to said main body portion;
- sealing means operatively associated with said second end of said main body portion for providing a seal for a male-end of an element;
- a flexible female-portion for receiving and locking a male-end therein, said female-portion being operative associated with said sealing means at said second end;
- means mounting said flexible, resilient female-portion for movement toward and away from said sealing means comprising wedge means operatively associated with said outer retaining means for urging said female-portion toward said sealing means when said outer retaining means is moved in a first direction.

CLAIM 18. The coupler according to claim 17, wherein said main body portion comprises an outer annular surface about which said outer retaining means at least partially telescopes; said outer annular surface comprising first cooperating means;

- said outer retaining means comprising interiorly-facing second cooperating means for engaging with said first cooperating means;
- said outer retaining means further comprising push-means arcuately spaced from said second cooperating means;

said outer retaining means being an substantially tubular and deformable, whereby, when said push-means is depressed, said second cooperating means is brought out of engagement with said first cooperating means for allowing movement of said outer retaining means relative to said main body portion.

CLAIM 19. The coupler according to claim 17, wherein said female portion comprises a split ring having interior male-thread engaging means, said split ring having first camming-surface means; said means for mounting said flexible, resilient female-portion for movement toward and away from said sealing means further comprising radially-compressible spacer means operatively associated with said split ring and having second camming-surface means for engagement with said first camming surface means; first camming-surface means being spaced from said second camming-surface means before said split ring is moved theretoward when initially receiving a male-end therein;

said split ring having third camming-surface means, and said wedge means having fourth camming-surface means cooperating with said third camming-surface means, whereby said wedge means may force said split ring toward said spacer means for causing engagement between said first and second camming-surface means after initial travel of said split ring when a male-end is inserted therein.

CLAIM 20. The coupler according to claim 19, wherein said wedge-means further comprises fifth camming-surface means, and said outer retaining means comprises sixth camming-surface means for engagement with said fifth camming-surface means, whereby said sixth camming-surface means forces said wedge-means in a first downward

vertical direction to cause said first and second camming-surface means to engage after initial travel to cause said spacer means to radial compress in order to allow additional travel of said split ring, whereby said outer retaining means may lock said female end in locking engagement with a male-end.